FOREST PEST MANAGEMENT
Pacific Southwest Region 82 0076

Report No. 81-32 (U.S. Forest Service. Region 5)

3430 Evaluation
November 20, 1981

PSW FOREST AND RANGE EXPERIMENT STATION
DEC 15 1981
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EVALUATION OF CURRENT INSECT AND DISEASE SITUATION IN THE GRIDER BURN, OAK KNOLL R.D., KLAMATH NATIONAL FOREST

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ABSTRACT

Fire in portions of the Grider Burn on a west-facing slope in the Grider Roadless Area was hot enough to kill or severely injure trees on about 250 acres. Many of these trees have flatheaded fir borer as well as ambrosia beetle and secondary flatheaded and roundheaded borer activity. Very few instances of attack by primary bark beetles were noted and many of these attacks were not successful. On the northeast-facing slope where the fire backed down toward Rancheria Creek, few trees were killed and there was little insect activity with the exception of a few spots where the fire was extremely hot. The insects which are currently active in the Grider Fire area do not pose a threat to the adjacent unburned areas. Additional trees which were severely injured or suddenly exposed as a result of the fire, or are on the edges of the burn, may be expected to die over the next few years. The dead and dying trees in the burn have already begun to deteriorate due to borer and ambrosia beetle activity.

INTRODUCTION

Chuck Timberman, Klamath National Forest Silviculturist, requested an evaluation of the Grider Burn on the Oak Knoll Ranger District. Dave Schultz and John Kliejunas from the Forest Pest Management Staff and Fred Krueger from the Oak Knoll Ranger District visited the area on November 3, 1981.

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The Grider Burn (T.45N., R.12W., S. 21 and 22 MDM) is located in the Grider Roadless Area (05067). The area was proposed as nonwilderness, but is included in the State of California vs. Bergland, et al., Lawsuit.

An existing temporary road to a 40 acre parcel of private land runs through the burn. Except for the removal of right-of-way timber along the temporary road, the area has not been harvested. The area is generally mixed conifer type, consisting of Douglas-fir, white fir, ponderosa pine, sugar pine, incense-cedar and madrone. Douglas-fir dwarf mistletoe, Arceuthobium douglasii, is quite prevalent throughout the area. The fire started on July 17, 1981, on or near the Pacific Crest Trail which parallels Grider Creek.

The fire burned up a west-facing slope and became quite intense from about mid-slope to the ridgeline. In an area of about 250 acres (Units 2 through 6 on attached map) the fire consumed the crowns on most of the trees and "cooked" the cambium of all trees under about 12 inches dbh. Some of the larger diameter trees had substantial live cambium at the time they were examined and it is possible that there may be scattered individuals, particularly ponderosa pine, which will be alive in 1982. The combination of severe injuries and sudden exposure will lead to continued mortality in and around the burned area for a number of years.

Many of the white fir and Douglas-fir in the area where the fire was the hottest contained larvae of the flatheaded fir borer, Melanophila drummondi. The adults of this beetle lay eggs in the bark crevices of Douglas-fir and true firs. After the eggs hatch, the larvae bore into the cambial area. If the host tree is relatively vigorous, the tree may overgrow the larva with callus tissue or the larva may take several years to develop. The flatheaded fir borer is commonly found in trees which have been injured, fire killed, recently felled or mistletoe infected. The life cycle in these less vigorous hosts takes about one year. Because the flatheaded fir borer is not very aggressive, there is little threat of a population buildup in the burn area and subsequent movement to nearby healthy stands.

A few instances of attacks by primary bark beetles were observed on pines in the severely burned area. Some of the ponderosa pines were attacked by the western pine beetle, Dendroctonus brevicomis, and the red turpentine beetle D. valens, but most of these attacks were not successful. A few sugar pines in the same area had been attacked by the mountain pine beetle, Dendroctonus ponderosae, but again the attacks were largely unsuccessful. Most of the trees in the burned area are not in the physiological condition that would lead to successful breeding by the Dendroctonus bark beetles. Trees which have had both the crown and phloem killed by fire will not be used by bark beetles for breeding. Most of the trees which have had less than 50% of the original crown killed by fire are unlikely to be successfully attacked by bark beetles. Trees which have been 50 to 100% defoliated by a fire and still have considerable green cambium are readily attacked by bark beetles, but the inner bark of these fire-scorched trees sometimes goes "sour" and kills the beetle larvae.

Trees of all species and size classes in units 2 through 6 are currently infested with secondary roundheaded and flatheaded wood borers and ambrosia beetles. These beetles infest only recently killed or cut trees and, due to changes in moisture content, they will not reinfest the trees from which they emerged. The borers and ambrosia beetles will probably infest subsequent mortality in the area, but will not contribute to the death of the trees. These insects penetrate the sapwood to depths of up to 4 inches rather quickly and cause degrade due to the tunnels they produce and the introduction of stain and decay fungi. By mid-1982, most of the trees under about 12 inches dbh in the severely burned area will have an extremely low timber value. The wood borers and ambrosia beetles often have a one-year life cycle, but it could be longer in wood with a low moisture content. Borer larvae can survive for years in lumber cut from infested timber and emerge after the wood is in use. Kiln drying of this lumber will generally kill any borer larvae in it.

The fire backed down the northeast-facing slope toward Rancheria Creek (Unit 7) and caused relatively light damage. The fire was intense enough in a few scattered spots to kill the smaller diameter timber, but in general, most of the trees on the slope have reasonable survival potential. No evidence of primary bark beetles or the flatheaded fir borer was seen. The only secondary insect activity observed were ambrosia beetles in a few badly scorched white fir trees.

MANAGEMENT ALTERNATIVES

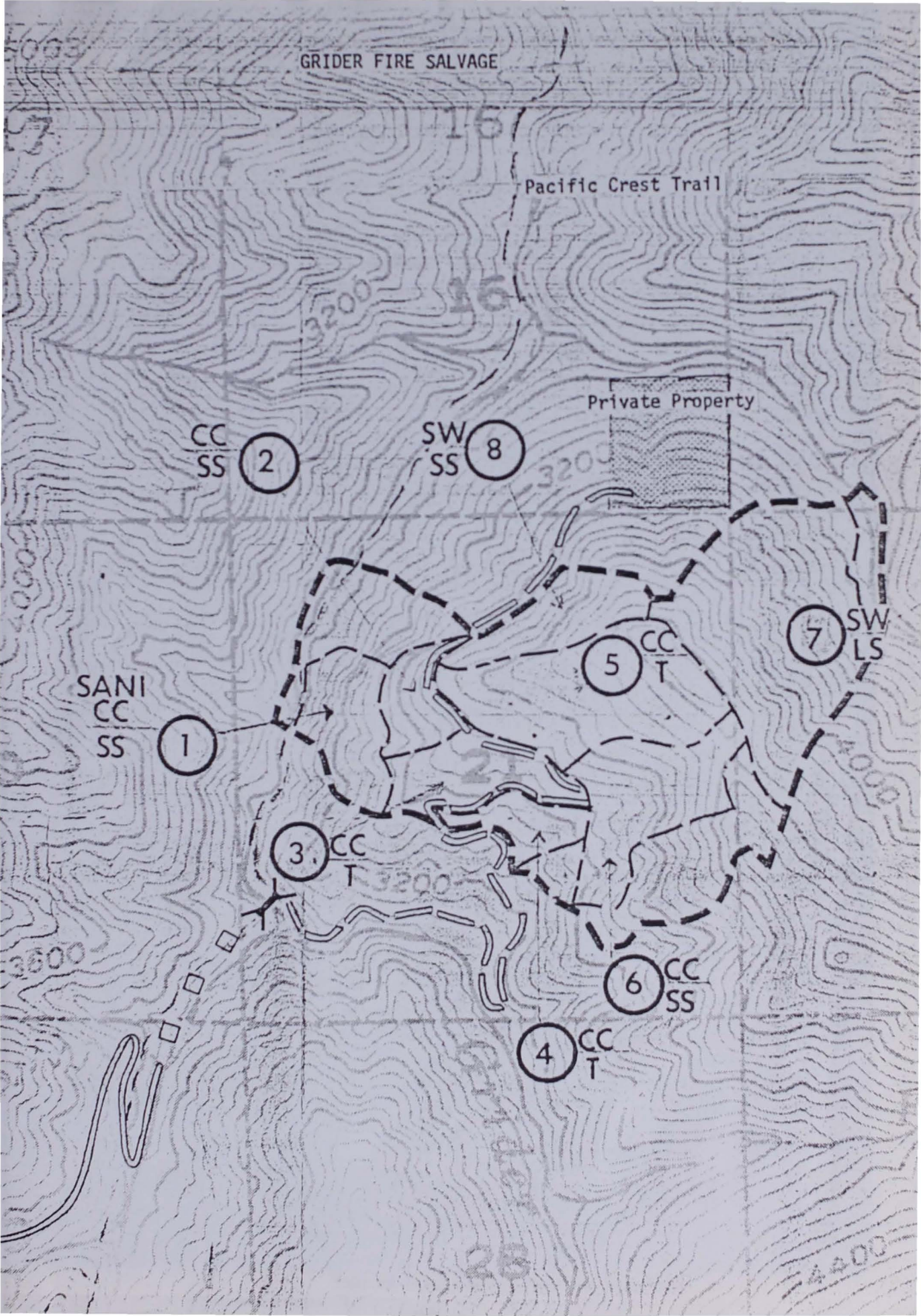
1. Do Nothing. The insects which are currently active in the dead an dying timber are for the most part secondary insects whch pose no threat to nearby areas with healthy timber. Additional trees will die on the edge of the burn over a period of several years but it is unlikely that bark beetles will build up in these trees and threaten other areas. Units 2 through 6 will probably revert to brush with a few scattered trees. Trees will eventually seed in, although it may take decades to establish a new stand. Douglas-fir dwarf mistletoe will spread to Douglas-fir in the new stand and lead to deformed and slow growing trees. Units 1, 7 and 8 will continue to be relatively decadent stands with high mortality due to a combination of overmature trees, Douglas-fir dwarf mistletoe and bark beetles during periods of low precipitation. Management Alternatives 2, 3, and 4, which follow, assume that there are plans to rehabilitate all or part of the burn.

2. Plant severely burned area without salvaging. Planting as quickly as possible would allow the site to be recaptured by trees. The shade provided by the dead standing timber could be beneficial to the reproduction for a time, but seedlings could be damaged when the snags eventually fall. Scattered overstory trees may remain alive for varying periods and compete with the seedlings or provide a source of dwarf mistletoe seed.

3. Clearcut severely burned area and plant. Clearcutting units 2 through 6 would recover some timber value and reduce the fuel load in the area. It would also allow some sort of site preparation to be done. The cut block would be large enough that it would be several hundered years before Douglas-fir dwarf mistletoe could spread to the center.

4. Treat all units in the burned area. In addition as to the action outlined in mangement alternative 3, shelterwood or sanitation cuts in units 1, 7 and 8 offers an opportunity to convert to younger, more vigorous stands and to recover some of the mortality which is likely to occur over the next few years.

Candidates for removal would include: 1) those trees with less than 50% of the original crown still alive, 2) trees with 25% or more of the cambium killed at the base, 3) any white fir tree with an open wound or ambrosia beetle frass, 4) trees with external indicators of decay such as conks, 5) Douglas-fir with dwarf mistletoe.


GRIDER FIRE SALVAGE
Pacific Crest Trail
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